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On the reproductive organs of the eels

M. Syrski

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Lastly, we can prove the disappearance of one of the two embryonic membranes, the amnios. The disks which surround the digestive tube are not here composed of hollow sacs, but of solid lamellæ; so that a single membrane, the skin of the *Nemertes*, results from their union. In a word, we see manifested under our eyes a remarkable tendency to the suppression of the exaggeration of the larval state which constitutes the *Pilidium*, and to a return to the direct mode of development.

Here, then, we have, by the side of a development very like that of the *Pilidium*, a very great simplification and an evident condensation of the embryogeny. One step further and we arrive at the extreme condensation which is observed in the larvæ of Desor. We have therefore before us an intermediate stage between the *Pilidium* and the larva of Desor; and this result seems to be of incontestable importance. It enables us to correlate the two widely different forms of the embryos of the Nemertians, and shows us that the mutual relations which exist between them are analogous to those which Fritz Müller has informed us exist between the *Nauplius* and the *Zoëa*. Like the *Nauplius*, the *Pilidium* is the primitive form; and the larva of Desor represents a condensed form derived from the former by the abbreviation of the embryogeny.—*Comptes Rendus*, January 25, 1875, pp. 270–273.

On the Reproductive Organs of the Eels. By M. SYRSKI.

In 1872 two memoirs appeared almost simultaneously by Italian authors, who announced that they had discovered that the eels are hermaphrodites. The agreement in general results was certainly adapted to inspire some confidence; but, on the other hand, considerable divergences in the descriptions of the organs showed that the question was far from being completely cleared up. These differences might arise from errors of observation; or they might be ascribed to differences of organization due to the species, age, or sex of the fishes examined.

According to M. Syrski all that relates to the male organs in these two memoirs is completely erroneous, and the eels are not hermaphrodites at all; MM. Balsamo-Crivelli and Maggi were the subjects of an illusion when they thought they had ascertained the presence of spermatozooids; the organs regarded by them as the testes are nothing more than fatty bodies.

Notwithstanding the assertions of the preceding authors, and the gap which exists in the researches of M. Syrski, the probabilities seem to be entirely in favour of the unisexuality of the eels.

In these fishes the males are smaller than the females. Eighty-six individuals, 218–430 millims. in length, examined by M. Syrski proved to be males; and ninety others, 275–1050 millims. long, were females. The previous observers having preferred examining large individuals, had only females under their inspection.

The testes appear as nearly symmetrical paired organs, in the form of long ribbons, attached, like the ovaries, along the dorsal wall of the abdominal cavity. That of the right side commences a

little further forward, and terminates not quite so far back as that of the left side, as is also the case with the ovaries. Both have at their posterior part a sort of prolongation (*pars recurrens*), which turns forward. Their hyaline aspect and their dimensions give them a great resemblance to the incompletely developed ovaries; but with a little attention it is seen that they have not the same structure as the female organs, but form two simple longitudinal series of lobules of regular form. Of these lobules there are about 48–50 in each testis; they are compressed and shorter at their base than at their free margin, which is broadly rounded, so that they slightly cover each other. The ovaries are suspended from simple ribbons formed by the peritoneum, whilst each of the testes adheres to the walls of a longitudinal canal (the *deferent duct*). Each canal terminates cæcally in front, and ends posteriorly in a triangular sac (*bursa seminalis*) applied against the lateral walls of the urinary bladder. The sac of one side is in communication with that of the other by a transverse fissure (*fissura recto-vesicalis*) which occurs between the rectum and the neck of the urinary bladder. This fissure also leads from the two sacs into a pit (*fovea recto-vesicalis*) which is continued into the genital pore. The genital pore itself does not open directly outwards, but into the urethra.

In the female there are neither canals nor sacs; but the genital pore also opens into the urethra.

The stroma of the testis is much more resistant than that of the ovary. Each lobe is formed of compartments about 0.05 millim. in diameter, filled with isolated nuclei, aggregations of nuclei, and cells.

The principal arguments which the author brings forward in favour of his new interpretation of the reproductive apparatus of the eels are as follows:—

1. The organs which he regards as testes occupy the same relative position as the ovaries, but differ from the latter in form and structure.

2. The ducts which are in close connexion with them, and open into the genital pore, cannot be any thing but the deferent ducts and the *vesiculæ seminales*.

3. The ducts, *vesiculæ*, and the genital pore open in proportion as the testes are developed—a course of things which is the same as that observed with regard to the female genital pore relatively to the development of the ovaries.

4. The lobate organs resemble, especially in structure, the testes of the fishes allied to the eels.

5. The eels which possess these organs are destitute of any other formation that could be regarded as a reproductive organ

This collection of facts appears quite conclusive. It now only remains to discover the spermatozooids, which M. Syrski has not been able to find in the small eels. This gap in the evidence is of considerable importance; and it is to be hoped that it may soon be filled.—*Sitzungsber. der Akad. der wiss. in Wien, Math.-naturw. Classe*, Band lxxix. April 1874; *Bibl. Univ.* February 15, 1875, p. 163.